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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,714	11/20/2001	Steven Wang	CNTR-105xx	9578
207	7590	01/05/2004		
WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			EXAMINER LEFLORE, LAUREL E	
			ART UNIT 2673	PAPER NUMBER
			DATE MAILED: 01/05/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/989,714

Applicant(s)

WANG, STEVEN

Examiner

Laurél E LeFlore

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) 12-47 and 49-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
    1. ☐ Certified copies of the priority documents have been received.  
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6.                      6) ☐ Other: .

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-11 and 48, drawn to an optical sensor, classified in class 435, subclass 808.
  - II. Claims 50-61, drawn to a cursor control device, classified in class 345, subclass 163.
2. The inventions are distinct, each from the other because of the following reasons:
3. Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination has specific properties of a base and support mechanism. The subcombination has separate utility such as an optical sensor for other devices.
4. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.
5. It is further noted that the applicant has acknowledged that these two groups are related as combination and subcombination in paper 8, Remarks on page 12,

paragraph 2. Thus, the applicant's election of Group I, claims 1-11 (and newly added claim 48), is acknowledged and claims 1-11 and 48 will be examined.

6. Applicant's election of group 1, claims 1-11 and 48, in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
7. It is further notable to the applicant that the preliminary amendment filed April 25, 2002, including claims 48 and 49, as stated in paper 8, Remarks page 12, third paragraph, is not present in the application's materials. However, as claims 48 and 49 are included in paper 8, claim 48 will be examined as part of group 1 and claim 49 will be withdrawn, as indicated by the applicant.

### ***Drawings***

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: element 57 figure 1, element 166 in figure 10 and element 134 in figure 13. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
9. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "115" and "118" in figure 6 have both been used to designate the circuit board. (See page 12, line 16 and page 13, line 118.) A

proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Specification***

10. The disclosure is objected to because of the following informalities:

On page 11, line 26, "106" should be "102".

On page 17, line 11, "focuses" should be "focus".

Appropriate correction is required.

11. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

Correction of the following is required:

Claim 10, lines 4-6, on page 3 of the amended claims (or page 23 of the original specification and claims) discloses that the focus area of the sensor is located "approximately the sum of two times the left travel distance plus the activation distance from the left end of the roller bar." This placement of the sensor is not described in the specification. Page 11, lines 21-27, of the specification disclose, "The sensor 106 is placed at the location shown to assure that a portion of the sleeve 72 always remains over the sensor 106 while allowing maximum horizontal traverse of the rollerbar 54. This location is displaced from the proximate end 110 of the access enclosure 106 by approximately the distance that distal end 74' travels." Thus, the specification discloses a location for the sensor that is different from that which is claimed. An "activation distance"

is also not disclosed in the specification. Without these claimed details, one of ordinary skill in the art would have been burdened to make and use the invention. If applicant were to amend the specification with the material in claim 10, this would overcome the objection.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-9 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Culver 4,982,618.

14. In regard to claim 1, Culver discloses an optical sensor assembly for tracking movement of a surface. See column 11, lines 62-62, disclosing rotary position encoders that "may be optical, contact, magnetic, inductive, or other." See column 12, lines 8-14, disclosing an optical encoder in which "a line pattern may be inscribed on the inner or outer surface of the cylinder to be directly read by adjacent fixed photocells or other sensors." Thus, the sensor assembly comprises a target comprising the surface movably mounted to present a varying segment of the surface to a focus area. The movably mounted surface is that of the cylinder.

Culver further discloses that the optical sensor comprises a sensing component mounted facing the surface of the target at the focus area, wherein

the optical sensor detects a change in position of said surface. See figure 2, depicting two sensors 15,21 mounted facing the cylinder. Also, "adjacent fixed photocells" are understood to face the cylinder if they are reading lines inscribed on it.

15. In regard to claim 2, Culver discloses that the sensor is positioned substantially beneath the surface. Again see column 12, lines 12-14, disclosing, "The horizontal axis is detected by a photodetector under the moving bar, reading the movement of lines on the bottom of the bar." Also see column 2, lines 42-45, disclosing that the tracked cylinder is mounted in the bar, and the cylinder and bar travel together. Thus, the sensor is positioned beneath the cylinder.
16. In regard to claim 3, Culver discloses that the target is cylindrical. (See rejection of claim 1). Culver further discloses that the sensor is aligned placing the focus area perpendicular to a longitudinal axis of the cylinder. (See rejection of claim 1 and figure 2.) It is thus inherent that the surface is the circumferential surface of the cylinder.
17. In regard to claims 4 and 5, Culver discloses that the cylinder has a diameter greater than approximately 8 mm and between 8 mm and 12 mm. See column 7, lines 8-9, disclosing, "a relatively small diameter of from about 4 to 12 mm is preferred".
18. In regard to claim 6, Culver discloses that the surface of the cylinder is textured. See rejection of claim 1. "A line pattern inscribed on the inner or outer surface of the cylinder" is understood to be a texture.

19. In regard to claim 7, Culver discloses that the cylinder is adapted to move vertically and the response of the optical sensor is substantially invariant to the vertical motion. See column 3, lines 28-31, disclosing "primary switch closure by means of downward pressure on the cylinder." Thus, vertical movement of the cylinder is disclosed. Culver further discloses in lines 43-48, "Downward...pressure...closes a switch, and permits such closure in isolation from the X-Y movements of the adjacent cylinder...the user may close a switch without risk of causing inadvertent X or Y movement of the control". Thus, the response of the optical sensor, which detects X and Y movement is substantially invariant to the vertical motion.
20. In regard to claim 8, see rejections of claims 2 and 3.
21. In regard to claim 9, see rejection of claim 7.
22. In regard to claim 48, Culver discloses that the optical sensor moves with the surface maintaining a constant distance to the surface. See rejection of claim 7 and figure 2, depicting the rotary encoder (optical sensor) 15, which is mounted in connection with rack and pinion connected to cylinder 16 mounted in bar 8. This entire structure is inserted into groove 28 above switch 23. Thus, this entire structure is depressed to activate switch 23. It is therefore inherent in this structure that the sensor moves with the surface and maintains a constant distance from the surface.

***Claim Rejections - 35 USC § 103***



23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Culver 4,982,618.

In regard to claim 10, Culver discloses an invention similar to that which is claimed in claim 10. See rejection of claim 1 for similarities. See figure 2, depicting a left end and a mounting end. Also see column 6, lines 10-19, disclosing, "Longitudinal movement of the sliding bar 8 or cylinder 16 is transferred to a transducer by a horizontal drive rack 11 linked to the right end of the sliding bar 8 by means of a pin 12 inserted into a hole 13 in the bar. The bottom surface of the drive rack is toothed, and engages a toothed pinion 14 which is mounted on the shaft of a horizontal motion encoder 15. This is a rotary encoder similar to encoder 21. The rack and pinion converts longitudinal movement of the sliding bar to rotation for detection by encoder 15." Thus, Culver discloses that the rollerbar is adapted to traverse a left travel distance (as part of longitudinal movement) and an activation distance (upon detection by encoder 15). Culver does not disclose that the focus area of the sensor is located at approximately the sum of two times the left travel distance plus the activation distance from the left end of the roller bar.

Culver discloses a mouse replacement device in which the optical assembly (rotary encoder) is located at the right end of the rollerbar. (Again see column 6, lines 40-49 and figure 2.) Culver further discloses in lines 49-52 that "this encoder may be mounted at other points".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Culver by positioning the focus area of the sensor at approximately the sum of two times the left travel distance plus the activation distance from the left end of the roller bar. One would have been motivated to make such a modification based on Culver's teaching that the sensor, and thus the focus area, may be mounted at points other than the one that is disclosed (right end). Also, there is no disclosed criticality of positioning the focus area at approximately the sum of two times the left travel distance plus the activation distance from the left end of the roller bar.

25. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Culver 4,982,618 in view of Nitsuma 5,164,712.

In regard to claim 11, Culver discloses an invention similar to that which is claimed in claim 11. See rejections of claims 1 and 10 for similarities. Culver discloses that the rollerbar has a first portion having a different surface from a second portion having a textured surface, the sensing component focused on the second portion. See rejection of claims 1 and 6 for disclosing that the sensor focuses on a textured surface, which is inscribed in the cylinder. Culver also discloses a bar (see figure 2, element 8), in which the cylinder is mounted. See

column 6, lines 13-17, disclosing, "The sliding moveable bar 8...is free to slide longitudinally on low-friction bearing supports... These supports slide on a smooth top surface of the recess in the support track." Thus, Culver discloses portion of the rollerbar that is smooth. Also, the low-friction, slideable nature of the bar indicates that it is smooth. Culver does not disclose that the first portion is shiny and hard.

Niitsuma discloses a rollerbar assembly with a bar (slider) made of synthetic resin and a guide member made of metal. Both synthetic resin and metal can be shiny. Also, hardness of the rollerbar is inherent as the entire bar is slideable with a single finger.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Culver by making the rollerbar have a shiny hard surface. One would have been motivated to make such a change based on the teaching of Niitsuma to use synthetic resin and metal for the assembly of the rollerbar.

### ***Conclusion***

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Li 5,635,926 discloses a rollerbar and sensor assembly.

Eckerberg et al. 6,018,334 discloses a movable keyboard support surface with sensors.

Culver 6,300,938 B1 discloses an assembly of two rollerbars with an optical sensing method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurel E LeFlore whose telephone number is (703) 305-8627. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (703) 305-3885. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

LEL

  
Amare Mengistu  
Primary Examiner